CARDIOVASCULAR FLASHLIGHT

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Life-threatening early saphenous vein graft stenosis after left main artery replacement

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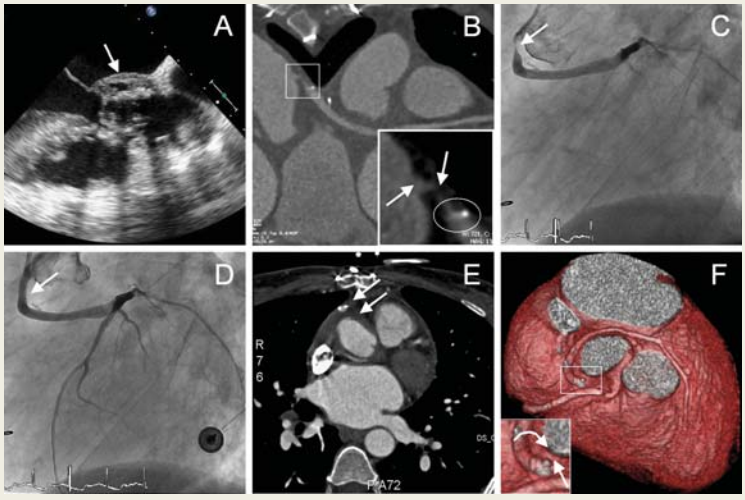

A 42-year-old woman with a past medical history of i.v. drug abuse and endocarditis presented in our emergency department with severe and persisting chest pain. Cardiac markers were elevated (hsTrop T 1.210 μg/L; CK 800 U/L; CK-MB 100 U/L) and ECG revealed descending ST-segment depression in lead I and aVL with negative T waves and horizontal ST-segment depression in lead V4–V6. Inflammatory parameters were negative. Three months before, the patient was referred to our institution because of antibiotic-resistant fever, chills, elevated inflammatory parameters, and splenomegaly. Following microbiological analysis, *Staphylococcus aureus* was verified and transoesophageal echocardiography (TEE) demonstrated aorto-ventricular disconnection caused by a circumferential partly thrombosed aortic annulus abscess (*Panel A*). Surgery was performed, replacing the aortic root and ascending aorta; the right coronary orifice was re-implanted and the left main artery was replaced by saphenous vein implant, connecting the left main stem and left neo-orifice, which is located at the anterior wall of the aortic graft, just distal to the right coronary orifice.

At the time of the current presentation, emergency TEE (data not shown) documented adequate function of the aortic valve prosthesis with no evidence of aortic valve vegetations and a left ventricular ejection fraction of 60%. Cardiac computed tomography angiography (CTA) failed to verify pulmonary embolism or aortic dissection, but showed an early, filiform ostial venous graft stenosis (*Panel B*). Coronary angiography confirmed an ostial subtotal graft stenosis (*Panel C*) and consecutive percutaneous coronary intervention with drug-eluting stent placement was carried out. Even after implantation of an intra-aortic balloon pump, the patient remained unstable throughout the intervention with a mean systolic pressure of 80 mmHg, and therefore the interventional cardiologists refrained from administering nitric oxide. Post intervention angiography revealed a good result with TIMI 3 flow (*Panel D*).

Axial CT sections prior coronary angiography demonstrated post-operative haematoma with para-aortic thickening and increased attenuation of the aortic wall closely related to the occluded vessel (*Panel E*). The course of the affected graft presented with an acute angle; therefore, the most likely aetiology of the stenosis was a mechanical kink in the proximal segment of the vessel (*Panels B* and *F*). However, the retro-aortic course of the venous graft was chosen to warrant a sleek course since intraoperatively the ostium of the left sinus valsalva felt to be friable and poorly accessible secondary to the operation of aortic valve and root replacement.

This case very well reflects the rare cause of an early venous graft stenosis secondary to an unusual course of the graft and post-operative para-aortic haematoma. Finally, whenever such clinical constellations occur, rare causes of very early graft stenosis should be kept in mind, as they are life-threatening and may result in fatal outcome.

Panel A. Pre-operative transoesophageal echocardiography, paravalvular abscess (arrow).

Panel B. Cardiac computed tomography angiography revealed an ostial, filiform venous graft stenosis (arrows), ending up at the first vessel clip (circle).

Panel C. Coronary angiography confirmed ostial subtotal graft stenosis (arrow).

Panel D. TIMI 3 flow after percutaneous coronary intervention and stent implantation (arrow).

Panel E. Postoperative haematoma formation and first vessel clip (axial computed tomography angiography section, double arrow).

Panel F. Cardiac computed tomography angiography volume rendering reconstruction showing right-angled ostial graft segment (curved arrow is pointing to the origin of the venous graft, straight arrow is pointing to the ostial stenosis).